

29 MAR 2002

U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE (REV 10/01)		ATTORNEY'S DOCKET NUMBER BDL-380XX U.S. APPLICATION NO. (If known, see 37 CFR 1.5) 10/089593
TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING A FILING UNDER 36 U.S.C. 371		
INTERNATIONAL APPLICATION NO. PCT/FR00/02699	INTERNATIONAL FILING DATE 29 September 2000 (29.09.00)	PRIORITY DATE CLAIMED 30 September 1999 (30.09.99)
TITLE OF INVENTION PRINTED WELDABLE FLEXIBLE POLYMER MATERIAL FOR PRODUCING STRETCHED STRUCTURES SUCH AS FALSE CEILINGS		
APPLICANT(S) FOR DO/EO/US Eric Vulot		
Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:		
1. <input checked="" type="checkbox"/> This is a FIRST submission of items concerning a filing under 35 U.S.C. 371. 2. <input type="checkbox"/> This is a SECOND or SUBSEQUENT submission of items concerning a filing under 35 U.S.C. 371. 3. <input type="checkbox"/> This express request to begin national examination procedures (35 U.S.C. 371(f)). The submission must include items (5), (6), (9) and (21) indicated below. 4. <input checked="" type="checkbox"/> The US has been elected by the expiration of 19 months from the priority date (Article 31). 5. <input checked="" type="checkbox"/> A copy of the International Application as filed (35 U.S.C. 371(c)(2)) a. <input type="checkbox"/> is attached hereto (required only if not transmitted by the International Bureau). b. <input checked="" type="checkbox"/> has been communicated by the International Bureau. c. <input type="checkbox"/> is not required, as the application was filed in the United States Receiving Office (RO/US). 6. <input checked="" type="checkbox"/> An English language translation of the International Application as filed (35 U.S.C. 371(c)(3)). a. <input checked="" type="checkbox"/> is attached hereto. b. <input type="checkbox"/> had been previously submitted under 35 U.S.C. 154(d)(4). 7. <input checked="" type="checkbox"/> Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3)) a. <input type="checkbox"/> are attached herewith (required only if not transmitted by the International Bureau). b. <input type="checkbox"/> have been communicated by the International Bureau. c. <input type="checkbox"/> have not been made; however, the time limit for making such amendments has NOT expired. d. <input checked="" type="checkbox"/> have not been made and will not be made. 8. <input type="checkbox"/> An English language translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)). 9. <input type="checkbox"/> An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)). 10. <input checked="" type="checkbox"/> A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)). <u>Consisting of 3 sheets of Claims 1-13.</u>		
Items 11. to 20. below concern document(s) or information included:		
11. <input checked="" type="checkbox"/> An Information Disclosure Statement under 37 CFR 1.97 and 1.98. <u>(with attached copy of International Search Report)</u> 12. <input type="checkbox"/> An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included. 13. <input checked="" type="checkbox"/> A FIRST preliminary amendment. <u>(with attached Amended Claims per IPER dated 31 January 2002)</u> 14. <input type="checkbox"/> A SECOND or SUBSEQUENT preliminary amendment. 15. <input type="checkbox"/> A substitute specification. 16. <input type="checkbox"/> A change of power of attorney and/or address letter. 17. <input type="checkbox"/> A computer readable form of the sequence listing in accordance with PCT Rule 13ter.2 and 35 U.S.C. 1.821-1.825 18. <input type="checkbox"/> A second copy of the published international application under 35 U.S.C. 154(d)(4). 19. <input type="checkbox"/> A second copy of the English language translation of the international application under 35 U.S.C. 154(d)(4). 20. <input checked="" type="checkbox"/> Other items or information:		
VERIFICATION OF TRANSLATION of PCT/FR00/02699 FORMAL DRAWINGS (3 sheets)		

Express Mail Number
EV 009953300 US

U.S. APPLICATION NO. (If known, see 37 CFR 1.5) 10/089593		INTERNATIONAL APPLICATION NO PCT/FR00/02699		ATTORNEY'S DOCKET NUMBER BDL-380XX	
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21. <input checked="" type="checkbox"/> The following fees are submitted: BASIC NATIONAL FEE (37 CFR 1.492 (a) (1) - (5)): Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO and International Search Report not prepared by the EPO or JPO \$1,040.00 International preliminary examination fee (37 CFR 1.482) not paid to USPTO but International Search Report prepared by the EPO or JPO \$890.00 International preliminary examination fee (37 CFR 1.482) not paid to USPTO but international search fee (37 CFR 1.445(a)(2)) paid to USPTO \$740.00 International preliminary examination fee paid to USPTO (37 CFR 1.482) but all claims did not satisfy provisions of PCT Article 33(1)-(4) \$710.00 International preliminary examination fee paid to USPTO (37 CFR 1.482) and all claims satisfied provisions of PCT Article 33(1)-(4) \$100.00 <p style="text-align: center;">ENTER APPROPRIATE BASIC FEE AMOUNT =</p>				CALCULATIONS PTO USE ONLY	
				\$ 90.00	
Surcharge of \$130.00 for furnishing the oath or declaration later than <input type="checkbox"/> 20 <input type="checkbox"/> 30 months from the earliest claimed priority date (37 CFR 1.492(e)).				\$	
CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE		
Total claims	25 - 20 =	5	X \$18.00	\$ 90.00	
Independent claims	1 - 3 =	0	X \$84.00	\$ 0	
MULTIPLE DEPENDENT CLAIM(S) (if applicable)				+\$280.00	
TOTAL OF ABOVE CALCULATIONS =				\$ 980.00	
<input type="checkbox"/> Applicant claims small entity status. See 37 CFR 1.27. The fees indicated above are reduced by 1/2.				\$ --	
SUBTOTAL =				\$ 980.00	
Processing fee of \$130.00 for furnishing the English translation later than <input type="checkbox"/> 20 <input type="checkbox"/> 30 months from the earliest claimed priority date (37 CFR 1.492(f)).				\$ 0	
TOTAL NATIONAL FEE =				\$ 980.00	
Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). \$40.00 per property				\$	
TOTAL FEES ENCLOSED =				\$ 980.00	
				Amount to be Refunded:	
				Charged:	

a. ☒ A check in the amount of \$ 980.00 to cover the above fees is enclosed. A check in the amount of \$ _____ is enclosed for the assignment recordation fee.

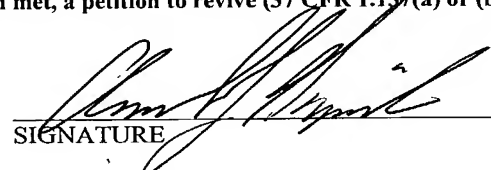
b. ☐ Please charge my Deposit Account No. _____ in the amount of \$ _____ to cover the above fees. A duplicate copy of this sheet is enclosed.

c. ☒ The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. 23-0804. A duplicate copy of this sheet is enclosed.

NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the application to pending status.

Customer Number 207
SEND ALL CORRESPONDENCE TO:

Weingarten, Schurgin, Gagnebin & Lebovici LLP
Ten Post Office Square
Boston, Massachusetts 02109


SIGNATURE

NAME: Charles L. Gagnebin III
REGISTRATION NUMBER: 25,467

Date: 3-29-02

10/089593

JC13 Rec'd PCT/PTO PATENT 29 MAR 2002

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application : ERIC VAULOT
Application No. :
Filed : Herewith
For : PRINTED WELDABLE FLEXIBLE POLYMER
MATERIAL FOR PRODUCING STRETCHED
STRUCTURES SUCH AS FALSE CEILINGS
Examiner :
Attorney's Docket : BDL-380XX

Group Art Unit:

* * * * *
I hereby certify that this correspondence is being deposited
with the United States Postal Service as first class mail in an
envelope addressed to: Commissioner for Patents, Washington,
D.C. 20231 on _____.

By: _____
Charles L. Gagnebin III
Registration No. 25,467
Attorney for Applicant

* * * * *
PRELIMINARY AMENDMENT

BOX PCT
Commissioner for Patents
Washington, D.C. 20231

Sir:

Submitted for examination is the attached English
translation of the claims that were amended by the International
Preliminary Examination Report dated 31 January 2002.

Kindly enter the following Preliminary Amendment in the
above-identified application:

WEINGARTEN, SCHURGIN,
GAGNEBIN & LEBOVICI LLP
TEL. (617) 542-2290
FAX. (617) 451-0313

Express Mail Number
EV 009953300 US

In the Claims:

In the Amended Claims of the International Preliminary Examination Report (attached) dated 31 January 2002, please amend the Claims to read as follows (a copy of the amended claims showing the additions and deletions appears at the end for the Examiner's convenience):

3/ A material according to claim 1, characterized in that it is a multilayer material.

4/ A material according to claim 1, characterized in that it is mono- or bi-oriented.

5/ A method of making a hot-tensioned false ceiling, by hot-tensioning a material of the kind presented in claim 1, in a false ceiling obtained by assembling rails, the method being characterized in that it comprises:

- a step of selecting designs to be printed on the material, said designs being mono- or polychromatic and being capable of being modified in shape, color, proportions, and dispositions, said designs being digitized and recorded in a computer memory of a system for controlling a printing machine; and

- a step of printing the selected design on the flexible polymer material in sheet form.

9/ A method according to claim 6, characterized in that the printing is performed on a plurality of bonded-together strips of material, and in particular is performed over the zones in which the strips are bonded together edge to edge.

10/ A method according to claim 6, characterized in that the printing is performed on each strip of material with the strips being assembled together by bonding performed after the printing.

12/ A false ceiling obtained by implementing the method presented in claim 5, characterized in that a catch member is defined in the frame of the false ceiling, the catch member being capable of receiving a margin member disposed along the periphery of the sheet of flexible polymer material that is hot-tensioned in said frame.

13/ A false ceiling according to claim 12, characterized in that the margin member is bonded close to the peripheral edge of the

tensioned sheet, said bonding being hidden from view by portions of the rails of the frame.

Please add the following new claims 14-25:

14/ A material according to claim 2, characterized in that it is a multilayer material.

15/ A material according to claim 2, characterized in that it is mono- or bi-oriented.

16/ A material according to claim 3, characterized in that it is mono- or bi-oriented.

17/ A method of making a hot-tensioned false ceiling, by hot-tensioning a material of the kind presented in claim 2, in a false ceiling obtained by assembling rails, the method being characterized in that it comprises:

- a step of selecting designs to be printed on the material, said designs being mono- or polychromatic and being capable of being modified in shape, color, proportions, and dispositions, said designs being digitized and recorded in a

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computer memory of a system for controlling a printing machine;
and

- a step of printing the selected design on the flexible polymer material in sheet form.

18/ A method of making a hot-tensioned false ceiling, by hot-tensioning a material of the kind presented in claim 3, in a false ceiling obtained by assembling rails, the method being characterized in that it comprises:

- a step of selecting designs to be printed on the material, said designs being mono- or polychromatic and being capable of being modified in shape, color, proportions, and dispositions, said designs being digitized and recorded in a computer memory of a system for controlling a printing machine;
and

- a step of printing the selected design on the flexible polymer material in sheet form.

19/ A method of making a hot-tensioned false ceiling, by hot-tensioning a material of the kind presented in claim 4, in a false ceiling obtained by assembling rails, the method being characterized in that it comprises:

- a step of selecting designs to be printed on the material, said designs being mono- or polychromatic and being capable of being modified in shape, color, proportions, and dispositions, said designs being digitized and recorded in a computer memory of a system for controlling a printing machine; and

- a step of printing the selected design on the flexible polymer material in sheet form.

20/ A method of making a hot-tensioned false ceiling, by hot-tensioning a material of the kind presented in claim 19, in a false ceiling obtained by assembling rails, the method being characterized in that it comprises:

- a step of selecting designs to be printed on the material, said designs being mono- or polychromatic and being capable of being modified in shape, color, proportions, and dispositions, said designs being digitized and recorded in a computer memory of a system for controlling a printing machine;

- a step of printing the selected design on the flexible polymer material in sheet form; and

- a step of printing a final design as selected by the user on paper by means of one of a silkscreen printing machine or a digital ink jet machine.

21/ A method according to claim 20, characterized in that the printing is performed on a plurality of bonded-together strips of material, and in particular is performed over the zones in which the strips are bonded together edge to edge.

22/ A method according to claim 20, characterized in that:

the printing is performed on each strip of material with the strips being assembled together by bonding performed after the printing;

it includes a step of predeforming the design to be printed on the flexible polymer material, the predeformation taking account of differential lengthening of the printed material during hot-tensioning, said predeformation substantially compensating for distortion in the design caused by the material being hot-tensioned and thus ensuring that a properly proportioned design is obtained on the tensioned printed material.

23/ A false ceiling obtained by implementing the method presented in claim 20, characterized in that:

a catch member is defined in the frame of the false ceiling, the catch member being capable of receiving a margin

member disposed along the periphery of the sheet of flexible polymer material that is hot-tensioned in said frame;

the margin member is bonded close to the peripheral edge of the tensioned sheet, said bonding being hidden from view by portions of the rails of the frame.

24/ A false ceiling obtained by implementing the method presented in claim 21, characterized in that:

a catch member is defined in the frame of the false ceiling, the catch member being capable of receiving a margin member disposed along the periphery of the sheet of flexible polymer material that is hot-tensioned in said frame;

the margin member is bonded close to the peripheral edge of the tensioned sheet, said bonding being hidden from view by portions of the rails of the frame.

25/ A false ceiling obtained by implementing the method presented in claim 22, characterized in that:

a catch member is defined in the frame of the false ceiling, the catch member being capable of receiving a margin member disposed along the periphery of the sheet of flexible polymer material that is hot-tensioned in said frame;

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the margin member is bonded close to the peripheral edge of the tensioned sheet, said bonding being hidden from view by portions of the rails of the frame.

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Group Art Unit:

REMARKS


This Preliminary Amendment puts the claims into proper form for examination. Note that claims 3-5, 9-10 and 12-13 have been amended; new claims 14-25 have been added; and claims 1-2, 6-8 and 11 remain unchanged. Kindly calculate the filing fee based on the amended claims.

****This Application contains a translation of the Abstract as it was when originally filed by the Applicant. No account has been taken of any changes that may have been made subsequently by the PCT Authorities acting ex officio, e.g., under PCT Rules 37.2, 38.2, and/or 48.3.

The Examiner is encouraged to telephone the undersigned attorney to discuss any matter which would expedite allowance of the present application.

Respectfully submitted,

ERIC VAULOT

By: 
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Date: 3-29-2

CLG/mc/269724-1
Enclosure

-10-

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Red-lined claims for the Examiner's convenience:

3/ A material according to claim 1 ~~or claim 2~~, characterized in that it is a multilayer material.

4/ A material according to ~~any one of claims 1 to 3,~~
characterized in that it is mono- or bi-oriented.

5/ A method of making a hot-tensioned false ceiling, by hot-tensioning a material of the kind presented in ~~any one of claims 1 to 4~~, in a false ceiling obtained by assembling rails, the method being characterized in that it comprises:

- a step of selecting designs to be printed on the material, said designs being mono- or polychromatic and being capable of being modified in shape, color, proportions, and dispositions, said designs being digitized and recorded in a computer memory of a system for controlling a printing machine; and

- a step of printing the selected design on the flexible polymer material in sheet form.

9/ A method according to ~~any one of claims 6 to 8~~, characterized in that the printing is performed on a plurality of bonded-

together strips of material, and in particular is performed over the zones in which the strips are bonded together edge to edge.

10/ A method according to ~~any one of claims 6 to 8,~~
characterized in that the printing is performed on each strip of
material with the strips being assembled together by bonding
performed after the printing.

12/ A false ceiling obtained by implementing the method presented in ~~any one of claims 5 to 11~~, characterized in that a catch member ~~(5)~~ is defined in the frame ~~(3)~~ of the false ceiling, the catch member being capable of receiving a margin member ~~(4)~~ disposed along the periphery of the sheet of flexible polymer material that is hot-tensioned in said frame ~~(3)~~.

13/ A false ceiling according to claim 12, characterized in that the margin member ~~(4)~~ is bonded close to the peripheral edge ~~(7)~~ of the tensioned sheet, said bonding being hidden from view by portions ~~(8)~~ of the rails of the frame ~~(3)~~.

AMENDED CLAIMS PER INTERNATIONAL PRELIMINARY EXAMINATION REPORT
DATED 31 JANUARY 2002

CLAIMS

- 1/ Prefabricated material in the form of a thin flexible polymer sheet for making hot-tensioned structures in
5 respective frames, such as false ceilings, in particular, the material being characterized in that it carries direct printing of designs of shapes and dimensions that are predetermined once the material is hot-tensioned.
- 10 2/ A material according to claim 1, characterized in that it is selected from the group comprising thermoplastic polymers such as plasticized polyvinyl chloride and polymers derived therefrom as superchlorinated vinyl chloride, polyvinylidene chloride, and copolymers of vinyl chloride and polyvinylidene
15 chloride.
- 3/ A material according to claim 1 or claim 2, characterized in that it is a multilayer material.
- 20 4/ A material according to any one of claims 1 to 3, characterized in that it is mono- or bi-oriented.
- 5/ A method of making a hot-tensioned false ceiling, by hot-tensioning a material of the kind presented in any one of
25 claims 1 to 4, in a false ceiling obtained by assembling rails, the method being characterized in that it comprises:
- a step of selecting designs to be printed on the material, said designs being mono- or polychromatic and being capable of being modified in shape, color, proportions, and
30 dispositions, said designs being digitized and recorded in a computer memory of a system for controlling a printing machine; and
 - a step of printing the selected design on the flexible polymer material in sheet form.

AMENDED CLAIMS PER INTERNATIONAL PRELIMINARY EXAMINATION REPORT
DATED 31 JANUARY 2002

6/ A method according to claim 5, characterized in that it includes a step of printing a final design as selected by the user on paper.

5

7/ A method according to claim 6, characterized in that the printing is performed by means of a silkscreen printing machine.

10 8/ A method according to claim 6, characterized in that the printing is performed by means of a digital ink jet machine.

9/ A method according to any one of claims 6 to 8, characterized in that the printing is performed on a plurality
15 of bonded-together strips of material, and in particular is performed over the zones in which the strips are bonded together edge to edge.

10/ A method according to any one of claims 6 to 8,
20 characterized in that the printing is performed on each strip of material with the strips being assembled together by bonding performed after the printing.

11/ A method according to claim 10, characterized in that it
25 includes a step of predeforming the design to be printed on the flexible polymer material, the predeformation taking account of differential lengthening of the printed material during hot-tensioning, said predeformation substantially compensating for distortion in the design caused by the
30 material being hot-tensioned and thus ensuring that a properly proportioned design is obtained on the tensioned printed material.

THE UNIVERSITY OF CHICAGO PRESS

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3/p 1

PRINTED WELDABLE FLEXIBLE POLYMER MATERIAL FOR PRODUCING
STRETCHED STRUCTURES SUCH AS FALSE CEILINGS

The invention relates to the technical field of
prefabricated flexible polymer materials for building
5 and/or decoration, such materials being in sheet, slab,
or panel form and of relatively small thickness, and they
can be used in particular for making false ceilings or
false walls, and more generally wall or ceiling
coverings.

10 The invention also relates to a method of making
such a material and to coverings obtained by tensioning
such a material.

Numerous embodiments of such materials are known in
the prior art, as are their use in making tensioned false
15 ceilings.

By way of example, reference can be made to the
French patent applications published under the following
numbers: 2 767 851, 2 751 682, 2 734 296, 2 699 209,
2 695 670, 2 685 036, 2 627 207, 2 623 540, 2 619 531,
20 2 592 416, 2 552 473, and 2 524 922.

Reference can also be made to the following French
patent applications in the name of the Applicant:
2 736 615, 2 756 600, 2 727 711, 2 712 325, 2 699 613,
and 2 658 849.

25 Flexible polymer materials for making tensioned
false ceilings and false walls and known in the prior art
are provided with numerous qualities such as, in
particular: fire resistance, proofing against air as well
as dust or moisture; ease of cleaning.

30 The resulting false ceilings can incorporate sound
or heat insulation, spotlamps or various kinds of
lighting, and also openings for ventilation or airing,
sprinklers.

Since they can be dismantled, they make it possible,
35 where necessary, to perform work inside the plenum.

Such polymer materials, which can be translucent or
opaque, being optionally bulk dyed, mat, gloss, marbled,

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with a suede or a glazed finish, can thus be used in industrial or hospital settings, in canteens, laboratories, or dwellings.

5 A gloss finish can provide a mirror effect which is often used in commercial centers, whereas a mat finish rather close to plaster in appearance is more usual in traditional decoration.

10 Tensioned false ceilings or tensioned false walls are installed on a made-to-measure basis, which requires polymer sheet material to be cut and assembled.

15 In spite of their numerous advantages that have led to them being used increasingly in a wide variety of premises, tensioned polymer sheet false ceilings and false walls as known in the prior art suffer from two drawbacks:

20 - when they are of large size, their uniform and regular appearance can appear too artificial or monotonous and this can make them unsuitable for use in certain conventional or historical architectural settings; and

25 - when implemented in conventional manner in the form of a series of strips, in spite of a degree of variety in finishes and bulk dyeing, they do not always make it possible to achieve personalization that matches the taste of a purchaser or the style of premises in which they are to be installed.

To mitigate those drawbacks, it might be thought that the sheets of materials used for making tensioned false ceilings or false walls could be printed.

30 Document FR-A-2 738 847 describes a fabric for false ceilings which is described on page 2, lines 30-31 as being "easily printed (silkscreen printing) or painted". The fabric in question comprises a polyester cloth substrate, in particular a jacquard knit with a
35 herringbone weave, coated in a plastisol on at least one face. That fabric is put into place at ambient temperature, so that mechanical characteristics, and in

particular elongation in the warp and the weft directions, remain substantially identical, thereby avoiding any defective appearance after cooling (page 1, line 10 - page 2, line 15 of document FR-A-2 738 847).

5 However, false ceilings are rarely put into place at ambient temperature since that requires the operator to exert a large amount of physical force, particularly when ceilings are of large area.

10 The conventional hot technique of installing tensioned ceilings gives rise, a priori, to severe difficulties if the ceilings are printed. These difficulties are mentioned in document WO-A-99/43906 (page 1, lines 25-30): tensioning such sheets after they have been printed can lead to images becoming distorted.

15 As a result, known printed false ceilings are in the form of suspended slabs of small area (typically 1 square meter (m²) with the printing of small areas presenting no technical problem.

20 The invention seeks to provide a material and a method for making printed tensioned false ceilings and false walls of large area, and suitable for enabling said false ceilings or false walls to be put into place while hot.

25 To this end, in a first aspect, the invention provides a bondable flexible polymer material in the form of thin sheets, slabs, or panels, that are prefabricated for making tensioned structures such as false ceilings, in particular, said material carrying direct printing of at least one design of shapes and dimensions that are
30 predetermined after the material has been put under tension.

35 In a second aspect, the invention provides a method of making a tensioned structure such as a tensioned false ceiling, in particular, using a material as defined above, the method comprising a first step of selecting designs to be printed on the material, said designs being mono- or polychromatic and being capable of being

modified in shape, color, proportions, and dispositions, said designs being digitized and recorded in a computer memory of a system for controlling a printing machine.

In a third aspect, the invention provides tensioned
5 structures including such printed flexible materials.

Other objects and advantages of the invention appear from the following description of embodiments, which description is given with reference to the accompanying drawings, in which:

10 - Figure 1 is a plan view of a false ceiling comprising four printed strips in one embodiment of the invention;

- Figure 2 is a diagrammatic cross-section on plane II-II of Figure 1; and

15 - Figures 3A and 3B are two diagrammatic cross-section views through the strips, showing two implementations of the method of the invention.

In the text below, mention is made only of an application to tensioned false ceilings.

20 Nevertheless, it should be understood that the description can be transposed by a person skilled in the art to tensioned false walls, and more generally, to any wall covering using a flexible polymer material in the tensioned sheet form.

25 The false ceiling 1 shown in Figure 1 is rectangular in outline, being made up of an assembly of four strips 2a, 2b, 2c, and 2d of substantially identical width ℓ .

Nevertheless, it should be understood that the false ceiling could be of some other outline, depending on
30 requirements, and could be made up by assembling together some larger or smaller number of strips, which need not necessarily be identical in width.

Where appropriate, the false ceiling could comprise a single strip only, e.g. when used in a relatively
35 narrow space such as a corridor.

The false ceiling 1 comprises a frame 3 made using rails, with the free edges of the assembled-together

strips having margin members 4 or hooks co-operating with catch members 5 on the frame 3 by simple engagement or by positive hooking.

The margin members 4 can be secured by bonding 6 close to the edges 7, said bonding being masked from sight, e.g. by a portion 8 of the rails.

Various other ways of securing the strips to the rails and various known forms of rail can be implemented when the strips are made of a flexible polymer material of the invention.

Consequently, the ways in which the strips are mounted on the frame are not described in greater detail herein.

In certain embodiments of the invention, the polymer material is selected from: thermoplastic polymers such as plasticized polyvinyl chloride (PVC) and polymers derived therefrom such as superchlorinated vinyl chloride, polyvinylidene chloride, and copolymers of vinyl chloride and of polyvinylidene chloride.

In certain particular embodiments, the material is a multilayer material, e.g. made by co-extrusion.

Where appropriate, the material can be mono- or bi-oriented.

The thickness e of the material lies in the range a few tenths of a millimeter to a few millimeters.

The material can be translucent or dyed in its bulk, so as to being capable of presenting a wide variety of colors; it can have finishes that are gloss, marbled, mat, suede, or glazed as selected by the user.

In an embodiment, the material is provided with flocking so as to give it a velvet or fabric appearance. By way of example, the surface of the material is coated in an adhesive suitable for finely-cut textile fibers, the fibers of the flocking being applied by screening and beating or by being blown under pressure, or indeed electrostatically when a high density of fibers is desired.

In order to enable the false ceilings to be adapted to the style desired for the premises in which it is to be mounted, or in order to enable the false ceiling to be personalized, it can carry a design D printed directly thereon.

The printing can be silkscreen printing or digital printing using an ink jet.

In a particular embodiment, the printing is performed in a single stage in order to produce a design of large dimensions, e.g. inscribed in a circular envelope having a diameter of the order of two to three meters.

There follows a description of various implementations of a method of making such printed tensioned ceilings.

In a first step, a design is selected, e.g. from a paper or digital catalog.

With a digital catalog, the printing machine can be controlled directly or indirectly by the computer system in which the selected design is stored.

By way of example, the catalog can comprise reproductions of classical works such as famous painted ceilings, and also reproductions of modern works, color photographs, or cartoon characters.

The catalog can have several color schemes for the same design, with it being possible, where appropriate, for the user to request a modification to the design or the color scheme given in an example in the catalog.

Several catalog designs can be selected for printing simultaneously.

In a variant implementation, the user can select a pattern that is not included in the catalog, for example, a personal photograph, or the logo of a business or some other body.

The designs that are selected can optionally be line drawings, and they can be monochrome or polychrome.

Where appropriate, the color and the finish of the printed material are matched to the colors of the selected design and/or to the colors of the premises in which the false ceiling is to be installed, or indeed to the desired style.

In an implementation of the method, the selected design is repeated so as to form an optionally regular pattern, with the individual designs being spaced uniformly or otherwise.

In a variant, at least two designs differing in shape and/or size and/or color can be repeated so as to form an optionally regular alternation.

The size of any selected design can be matched to the dimensions of the final false ceiling.

The position of any selected design can likewise be adapted to any looked-for effect.

Thus, for example:

- a drawing reproducing artificial old-fashioned ceiling moldings can be placed centrally on the false ceiling around a chandelier or other lighting system placed in the center of the ceiling; and

- a design reproducing wallpaper patterns can be placed at the margins of the false ceiling so as to extend those patterns, so to speak.

The selected design can thus be placed in the center or at the periphery of the false ceiling, covering substantially its entire surface area or only a portion thereof.

Where appropriate, only a portion of a catalog design need be selected for printing purposes.

Once this first step of selecting the shapes, locations, and colors of the design(s) has been performed, an optional second step of printing on paper or some other low-cost medium can be carried out in order to enable the user to view, at little cost, the final effect that will be obtained after the false ceiling has been put into place.

Such printing on paper can be performed on a medium of large size, e.g. having a width in excess of two meters, using the same machine as is used for printing the sheets of flexible polymer material.

5 Once the user has confirmed the selected design, a third step of printing proper on the sheet of flexible polymer material can be performed in the factory, away from the site where the tensioned false ceiling is to be installed.

10 In one implementation of this third step, printing is performed strip by strip, as represented diagrammatically in Figure 3A.

A single design can optionally extend over a plurality of printed strips prior to assembly.

15 When the strips are assembled together by bonding, a protective flap 10 can be put into place in the vicinity of each side edge 11 of the strips so as to enable bonding to be taken up after printing has been performed.

20 Bonding can be performed using ultrasound, high frequency, heat-sealing, etc. as a function specifically of the chemical nature of the flexible polymer material used.

25 When the nature of the inks used for printing is incompatible with the methods used for bonding, a mask or some other means suitable for protecting the side edges 11 of the strips should be put into place in the printing machine.

30 In another implementation of the third step of printing the strips (Figure 3B), the printing is performed after the strips have been bonded together.

In this implementation, printing is performed on a plurality of bonded-together strips of material, and in particular it is performed over the edge-to-edge bonding zones between the strips.

35 This second implementation can correspond both to a design D that extends over a single strip, and to a

place while hot, the design returning to its desired outlines and proportions when the sheet material cools.

As is known, per se, hot installation makes it easier to put the false ceiling or false wall into place
5 because the sheet material used expands thermally.

In another implementation, printing is performed on the sheet material for the false ceiling or false wall while it is in the tensioned state, with its tension then being substantially identical to the tension that will
10 subsist after the false ceiling or false wall has been put into place.

ART 34 ADPT

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AMENDED CLAIMS PER INTERNATIONAL PRELIMINARY EXAMINATION REPORT
DATED 31 JANUARY 2002

CLAIMS

- 1/ Prefabricated material in the form of a thin flexible polymer sheet for making hot-tensioned structures in
5 respective frames, such as false ceilings, in particular, the material being characterized in that it carries direct printing of designs of shapes and dimensions that are predetermined once the material is hot-tensioned.
- 10 2/ A material according to claim 1, characterized in that it is selected from the group comprising thermoplastic polymers such as plasticized polyvinyl chloride and polymers derived therefrom as superchlorinated vinyl chloride, polyvinylidene chloride, and copolymers of vinyl chloride and polyvinylidene
15 chloride.
- 3/ A material according to claim 1 or claim 2, characterized in that it is a multilayer material.
- 20 4/ A material according to any one of claims 1 to 3, characterized in that it is mono- or bi-oriented.
- 5/ A method of making a hot-tensioned false ceiling, by hot-tensioning a material of the kind presented in any one of
25 claims 1 to 4, in a false ceiling obtained by assembling rails, the method being characterized in that it comprises:
- a step of selecting designs to be printed on the material, said designs being mono- or polychromatic and being capable of being modified in shape, color, proportions, and
30 dispositions, said designs being digitized and recorded in a computer memory of a system for controlling a printing machine; and
 - a step of printing the selected design on the flexible polymer material in sheet form.

AMENDED CLAIMS PER INTERNATIONAL PRELIMINARY EXAMINATION REPORT
DATED 31 JANUARY 2002

6/ A method according to claim 5, characterized in that it includes a step of printing a final design as selected by the user on paper.

5

7/ A method according to claim 6, characterized in that the printing is performed by means of a silkscreen printing machine.

10 8/ A method according to claim 6, characterized in that the printing is performed by means of a digital ink jet machine.

9/ A method according to any one of claims 6 to 8, characterized in that the printing is performed on a plurality
 15 of bonded-together strips of material, and in particular is performed over the zones in which the strips are bonded together edge to edge.

10/ A method according to any one of claims 6 to 8,
 20 characterized in that the printing is performed on each strip of material with the strips being assembled together by bonding performed after the printing.

11/ A method according to claim 10, characterized in that it
 25 includes a step of predeforming the design to be printed on the flexible polymer material, the predeformation taking account of differential lengthening of the printed material during hot-tensioning, said predeformation substantially compensating for distortion in the design caused by the
 30 material being hot-tensioned and thus ensuring that a properly proportioned design is obtained on the tensioned printed material.

AMENDED CLAIMS PER INTERNATIONAL PRELIMINARY EXAMINATION REPORT
DATED 31 JANUARY 2002

12/ A false ceiling obtained by implementing the method presented in any one of claims 5 to 11, characterized in that a catch member (5) is defined in the frame (3) of the false ceiling, the catch member being capable of receiving a margin member (4) disposed along the periphery of the sheet of flexible polymer material that is hot-tensioned in said frame (3).

13/ A false ceiling according to claim 12, characterized in that the margin member (4) is bonded close to the peripheral edge (7) of the tensioned sheet, said bonding being hidden from view by portions (8) of the rails of the frame (3).

A B S T R A C T

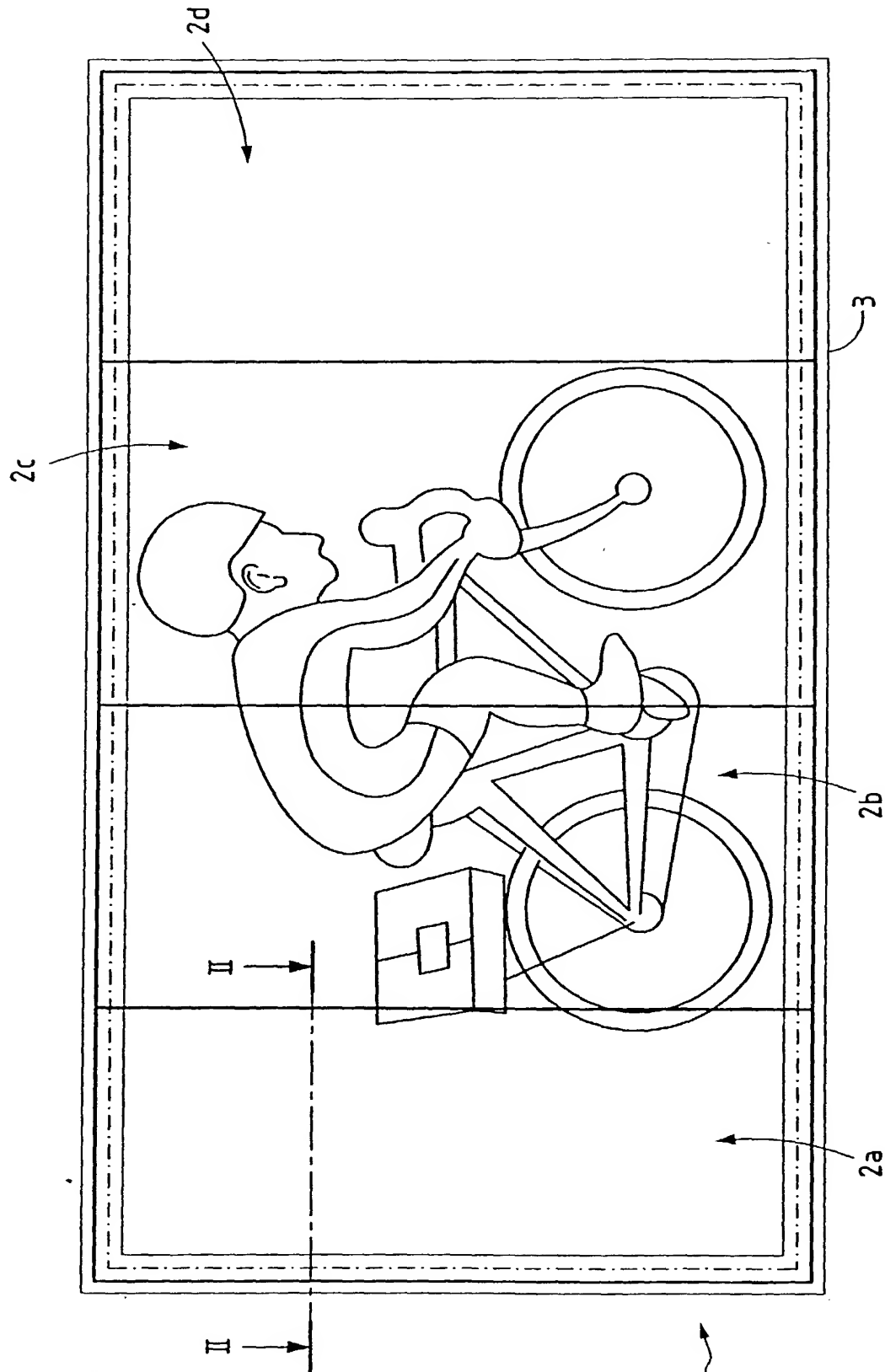
PRINTED WELDABLE FLEXIBLE POLYMER MATERIAL FOR PRODUCING
STRETCHED STRUCTURES SUCH AS FALSE CEILINGS

5

Prefabricated bondable flexible polymer material in
thin sheet, slab, or panel form for making tensioned
structures such as false ceilings in particular, said
mono- or multilayer material such as plasticized PVC, for
10 example, carrying a direct ink jet or silkscreen print of
at least one design of shapes and dimensions that are
predetermined once the material is under tension; making
a tensioned structure such as a tensioned false ceiling,
in particular, from such a material, by means of a first
15 step of selecting the type, dimensions, and dispositions
of the mono- or polychromatic designs to be printed, said
designs being digitized and recorded in a computer memory
of a system for controlling a printing machine, printing
optionally being performed on a plurality of bonded-
20 together strips of material, and in particular over zones
of edge-to-edge bonding between the strips, said printing
taking place before or after bonding.

25

30



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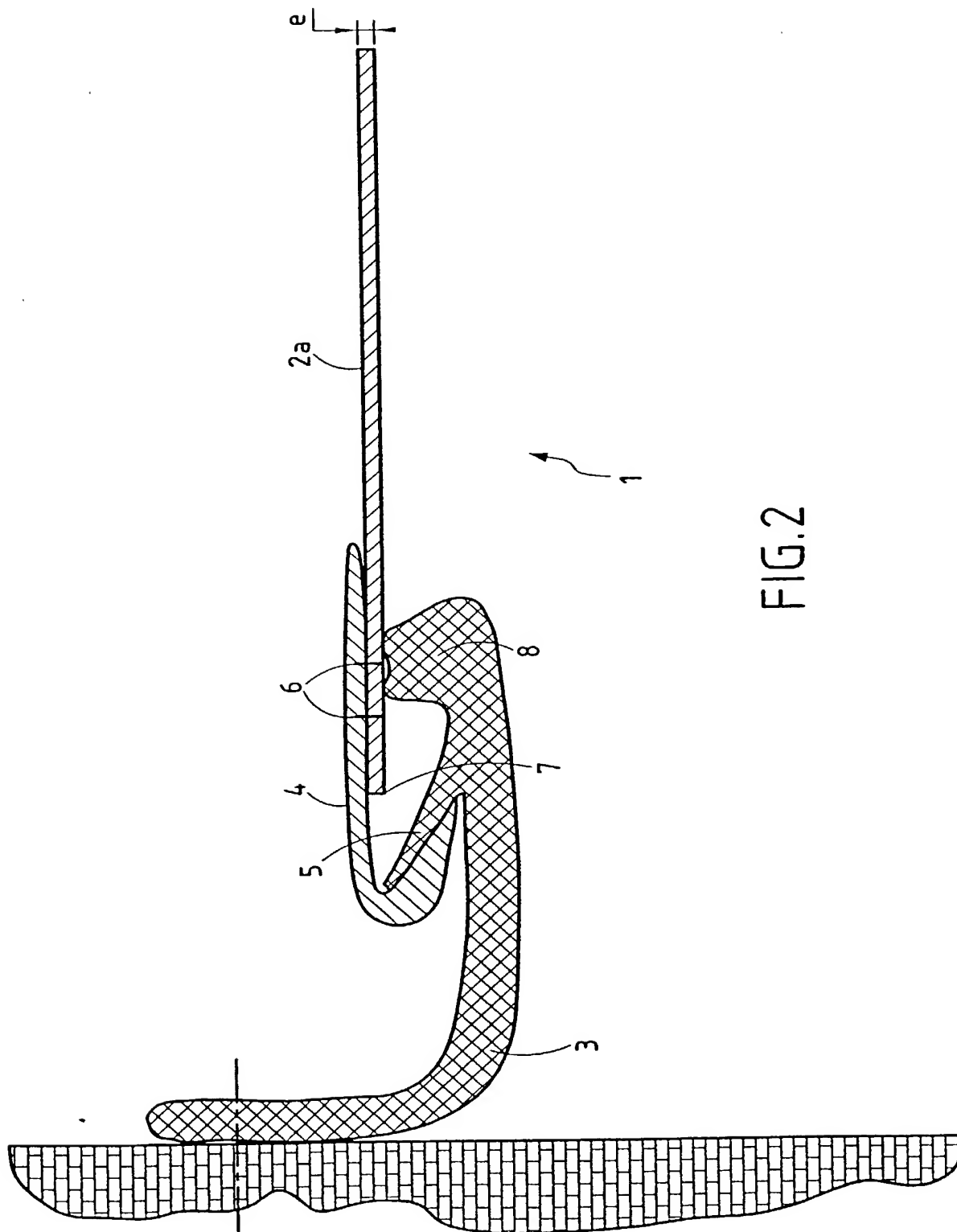
 $2/\bar{3}$ 

FIG. 2

3/3

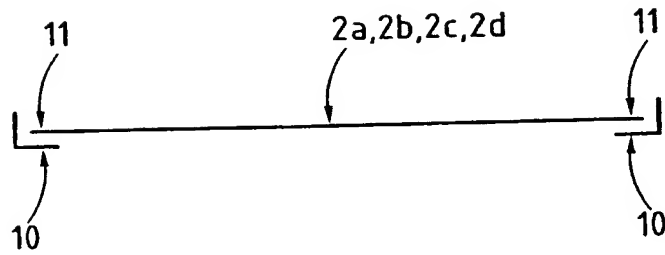


FIG. 3A

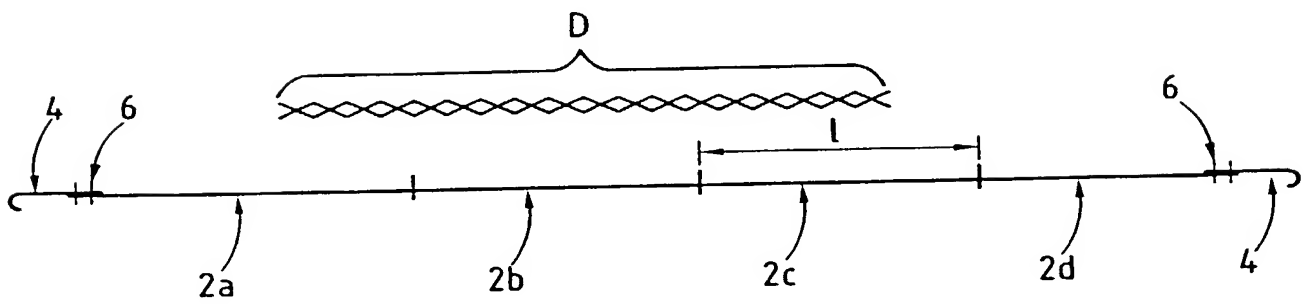


FIG. 3B

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Sheet 1 of 2

Attorney
Docket No.: BDL-380XX

DECLARATION AND POWER OF ATTORNEY

As a below-named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name;

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

**PRINTED WELDABLE FLEXIBLE POLYMER MATERIAL FOR PRODUCING STRETCHED
STRUCTURES SUCH AS FALSE CEILINGS**

The specification of which (check one):

☐ is attached hereto. ☒ was filed on March 29, 2002 as Application No. 10/089,593 ;
amended on _____ (if applicable).

☒ was filed as PCT International. Appl. No. PCT/FR00/02699 on 29 September 2000 ,
and was amended under PCT Article 19 on _____ (if applicable).

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to the patentability of this application in accordance with Title 37, Code of Federal Regulations §1.56(a).

I hereby claim foreign priority benefits under Title 35, USC §119(a)-(d) of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

<u>Prior Foreign Application(s)</u>		<u>Date Filed</u>	<u>Priority Claimed</u>	
<u>99/12426</u> (Number)	<u>France</u> (Country)	<u>30 September 1999</u> (Day/Month/Year)	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
<u> </u> (Number)	<u> </u> (Country)	<u> </u> (Day/Month/Year)	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<u> </u> (Number)	<u> </u> (Country)	<u> </u> (Day/Month/Year)	<input type="checkbox"/> Yes	<input type="checkbox"/> No

I hereby claim the benefit under Title 35, USC §119(e) of any United States provisional application(s) listed below:

(Application Number)

(Filing Date)

(Application Number)

(Filing Date)

(Application Number)

(Filing Date)

Express Mail Number

EU009945042 US

Attorney

Docket No.: BDL-380XX

I hereby claim the benefit under Title 35 USC §120 of any United States application(s) listed below and insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35 USC §112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, §1.56(a) which occurred between the filing date of the prior application and the national or PCT international filing date of this application:

(Application No.) (Filing Date) (Patented/pending/abandoned)

(Application No.) (Filing Date) (Patented/pending/abandoned)

(Application No.) (Filing Date) (Patented/pending/abandoned)

POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) to prosecute this application and transact all business connected therewith in the Patent and Trademark Office, and to file with the USRO any International Application based thereon.

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I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

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Signature: (Please sign and date in permanent ink) X VAULOT Eric		Date signed: X 26/04/2002